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ABSTRACT

In developing a nationwide education information system, the U. S. Office of Education faced two problems common to many countries: (1) How to develop a system for education, a field with little experience in modern information systems; and (2) How to acquaint educators with the system and train them in using its services. This paper reports results of experiences of the U. S Office of Education in attempting to resolve both problems. Included are references to related documents, Appendices listing the ERIC clearinghouses and data on the growth and development of ERIC products and services. (Author/LS)

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A B S T R A C T

Training of Users: Nonconventional Tools-- Education and Behavioral Sciences[1/]

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In developing a nationwide education information system, the U.S. Office of Education faced two problems common to many countries: (1) How to develop a system for education, a field with little experience in modern information systems; and (2) How to acquaint educators with the system and train them in using its services. This paper reports results of experiences of the U.S. Office of Education in attempting to resolve both problems.

Experience from the resulting system, the Educational Resources Information Center (ERIC), described briefly because details are already available, is based on document processing through decentralized, subject-centered clearinghouses which also have responsibility for generating information analysis products. The combined documentation and information analysis roles has been remarkable successful. Data are given on the growth and development of ERIC products and services. After the development work for ERIC was completed, attention was shifted to training users. Procedures described in detail have included widespread distribution of a booklet entitled "How to Use ERIC," a traveling exhibit that describes ERIC, a multi-media kit with a filmstrip and study guides that illustrate how to use ERIC, and a series of workshops and orientation sessions for users. The most effective training has been based on face-to-face discussion with the specailists responsible for ERIC collections maintained by educational organizations through the United States.

In addition to seminars across the country with education information specialists, the Office of Education has established an Educational Reference Center to serve its professional staff and to provide a training and demonstration site for education information specialists. Also, the Office of Education has provided support for production of three films that describe how to use the current awareness and retrospecitive search services of major U.S. Government information services. One film provides an introduction to current programs; a second gives librarians and information specialists more detail on these programs; and the third is specifically directed to the ultimate users of the information systems.

[1/] Paper presented at the 35th International Congress on Documentation, Buenos Aires, Argentina, September, 1970. Available from the ERIC Document Reproduction Service, as ED 040 311; see November issue of Research In Education for instructions for ordering this document and for its hard copy price; its microfiche price is $.25.

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Training of Users: Nonconventional Tools-- Education and Behavioral Sciences

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Introduction

In developing a nationwide education information system, the U.S. Office of Education faced two problems common to many countries: (1) How to develop a system for education, a field with little experience in modern information systems; and (2) How to acquaint educators with the system and train them in using its services. This paper reports results of experiences of the U.S. Office of Education in attempting to resolve both problems. Also provided is a description of several efforts being made by the Office of Science and Technology in the Office of the President (of the United States) and the Office of Education to acquaint users with the vast array of scientific, technical and other comprehensive information sources and systems in the United States.

Unique issues for training users of educational information systems

Most information systems in the United States and other countries are for the control of scientific and technological literature. When the U.S. Office of Education decided to develop the Educational Resources Information Center (ERIC for short) as a national education document storage and retrieval system, it began one of the few large scale document retrieval and information analysis systems in the world outside the fields of science and technology. Numerous problems had to be faced.

In the United States, education is locally controlled: there are over 21,000 local, autonomous school districts in addition to 50 State education agencies. Further, there are over 700 major professional educational organizations, in the United States, each with a publishing program, and many of which have counterpart State organizations. Higher education in the United States is conducted through nearly 2,000 colleges and universities, many of which have hundreds of specialized schools and departments. Over 30 different Federal agencies have something to do with education as well.

It is not surprising, therefore, that educational literature in the United States is both widely scattered and voluminous. Office of Education studies show that well over 40,000 separate educational reports

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are released through thousands of sources annually in the U.S.--from colleges and universities, research and development organizations, local and State educational agencies, Federal Government offices, foundations, State and national professional organizations, and business and industrial groups. Another 15,000 articles appear in over 500 periodicals that include a substantial number of articles relevant to education.

In addition to the organizational complexity of education in the United States and the scatter and volume of its literature, another serious problem confronted the designers of ERIC. As ERIC became operational, how could potential users who have had little or no experience with systematic information retrieval be encouraged to use ERIC's products and services? Education's problem in this regard, is different from comparable user training issues in most sciences. In receiving training in research methods, including literature searching, trained scientific and technical personnel generally acquire a disciplined, questioning perspective and seek data and information that will clarify an issue. In contrast, educators usually are not well grounded in scientific methods of inquiry and are not as committed to basing decisions upon relevant data and information. Moreover, unlike the situation in most scientific fields, education has lacked comprehensive documentation tools.

Thus, training was seen as a large and important undertaking, without which, ERIC would remain relatively unused, regardless of how well designed it was or how well it operated.

ERIC as a system

A brief description of ERIC is necessary to understand the programs developed for training its users. Persons interested in detailed information about ERIC may consult several sources (1,2,3,4,5,6,7,8,9).

The Office of Education decided to base ERIC on the operation of decentralized clearinghouses, each of which focuses on a specific educational subject or topic. (The 20 clearinghouses now comprising the ERIC network are listed in Appendix A). There were a number of reasons for organizing document acquisition and selection, other document functions, information analysis, and limited dissemination and user service functions around semi-autonomous, subject-focused, and decentralized clearinghouses. In this way, highly competent subject specialists could devote part of their time to documentation activities in the subject fields, while maintaining their professional growth and competency through related teaching, research, and consulting roles. Also, the continuing professional ties between clearinghouse directors and their key staff could aid in document acquisition from those portions of the complex U.S. education establishment relevant to each clearinghouse. Moreover, input channels could be reversed easily and become avenues for selective dissemination of information.

Also, as anticipated, the continuing ties between clearinghouses and their professionally-linked colleagues across the country greatly advanced training efforts in the use of ERIC.

Although clearinghouses form the base of the internal ERIC system, they are not the disseminators of the products from the entire system. Obviously, users had to be provided one source for searching for documents processed by all clearinghouses. Similarly, there had to be one source for reproduction and distribution of all documents added to the system. The Office of Education, therefore, publishes an abstract-index journal, Research In Education (10), for announcing the approximately 1,000 new reports added monthly to ERIC's collection. Semi-annual and annual cumulative indexes for the monthly issues of Research In Education also are published. The ERIC Document Reproduction Service sells reports cited in Research In Education and several special ERIC collections in either microfiche or hard copy. Prices for all reports are listed as part of their citations in Research In Education.

Other ERIC-related publications include Current Index to Journals in Education (11), a monthly index to articles in approximately 500 English-language and 15 non-English journals relevant to education, (also with semi-annual and annual cumulative indexes), and an annual edition of the Thesaurus of ERIC Descriptors (12).

Document surrogate information from the ERIC system is now available in magnetic tape form. Magnetic tapes containing document records from Research In Education, Current Index to Journals in Education, and several ERIC indexes to specialized collections can be purchased through the LEASCO Systems and Research Corporation, 4833 Rugby Avenue, Bethesda, Maryland, 20014.

Finally, each of the clearinghouses produce bibliographies, state-of-knowledge papers, and other publications focused on critical topics within their scope of interest. Annual bibliographies of clearinghouse publications are available (13, 14, 15).

Development of the system and delivery of products had to precede training of users. 2/ Still, training activities were begun as soon as products became available.

User training approaches used for ERIC

User training approaches developed for ERIC have evolved through several stages: creating general awareness of ERIC; providing inservice training for effective use of ERIC products and services; and beginning ERIC training programs for prospective educators and librarians.

2/ Indicators of the development and use of ERIC since its inception as a system in 1966 to the year ending June 1970 are listed in Appendix B.

Creating awareness of ERIC

Before anyone can use an information service, they must first become aware of it and have some basis for deciding whether the new services will really help them in their work. Creating awareness about ERIC's products is carried on continuously through the separate efforts of each clearinghouse and by the central ERIC management staff in the Office of Education. For example, upon its establishment, each clearinghouse initiates a promotional campaign to acquaint major local, State and national organizations, leading researchers and scholars, and key educators across the country in fields served by the clearhinghouse with its programs and the products and services of the ERIC system as a whole. Metohds used include mailings of letters for soliciting documents and announcing services; distribution of brochures describing ERIC and the respective clearinghouse; publishing articles in major professional journals about ERIC and how to use its services, conducting orientation conferences; and holding seminars on use of ERIC at the clearinghouses. Personal contacts have proved to be the most effective way of creating an understanding of how to use ERIC.

In addition to the efforts of the separate clearinghouses, the central ERIC staff in the Office of Education arranges for national programs to acquaint potential users with ERIC. Again, initial efforts were directed to acquainting groups and organizations with the existance of ERIC products and how to acquire them--such as Research in Education, Current Index to Journals in Education, the Thesaurus, and so on. Several brochures describing the entire ERIC system and listing all its products have been widely distributed. Also, separate descriptive brochures for each major product such as Research in Education, Current Index to Journals in Education, the Thesaurus, and the availability of ERIC master magnetic tapes, are made available nationally and internationally. Specific target audiences for the Office of Education program are the major professional organizations, and State education departments, large local school districts, and the news media. Information supplied to these organizations is relayed through their dissemination channels to thousands of potential users.

The Office of Education also focused upon informing college, university, and other library and information centers about ERIC because these groups would become the large institutional users of ERIC products and services. Techniques used have included mailing of brochures and use of an ERIC exhibit and presentations at library and information society conferences.

ERIC's monthly report announcement journal, Research in Education, also carries a special section in which new ERIC products and services are described. In this way, persons already using one of ERIC's basic products are automatically kept informed about new products or developments related to ERIC.

Finally, a short newsletter containing information about new or coming ERIC developments is mailed to all groups that buy all ERIC microfiche.

Inservice training for effective use

Acquainting persons with the existance of ERIC products is one thing; training persons already engaged in professional roles (inservice training) to use these tools effectively is another task. Development of training materials and their use is the second continuing training task of ERIC. This task, again far from completed, has been approached in five main ways:

1. Preparation of training materials by the Office of Education. Several types of user-oriented materials have been widely distributed to institutions having ERIC materials and are used in training programs supported by the Office of Education or conducted by clearinghouses. These are:

. How to Use ERIC (16): a graphic aid for the use of the ERIC system, available from the Superintendent of Documents, U.S. Government Printing Office.

. Three filmstrips and an accompanying record on using ERIC are available from the National Audio Visual Center, Washington, D.C. 20409; telephone: (301) 449-7755 and 7756. Price: $5.00 for the set, which includes "Introduction to ERIC," "How to Use ERIC," and "ERIC Advanced Training Program."

. ERIC: Your Guide to Current Educational Information (17): This eight-page insert describes various ERIC products and tells how to order and use them.

. Instructional materials on the Educational Resources Information Center, in three parts: Part 1, Audio-tape and slide presentation; Part 2, 52 descriptive sheets on various ERIC products (for direct use or preparing transparencies); and Part 3, "How to Conduct a Search through ERIC, 24 pp. These materials were developed by the American Association of College Teachers Education, Washington, D.C. and are expected to be available through the National Audio Visual Center, Washington, D.C. 20409, by December 1970. When completed, these materials will replace the set of three filmstrips now available.

2. Use of these materials by clearinghouses. Each clearinghouse conducts a continuing educational program through individual or small group conferences with users at the clearinghouses. Also, clearinghouses arrange more formal training sessions based on use of the Office of Education training materials.

3. Workshops and seminars supported by the Office of Education. Mailing training materials does not ensure their use. Guided experience is so often necessary to ensure effective use of information tools, especially with persons not having formal training in information retrieval. Therefore, workshops are conducted periodically to train educators who are becoming information specialists in the use of ERIC products. Two types of programs have been used: (1) short two-day orientation sessions to provide some understanding of the tools and how to use them; and (2) four to five day workshops, with problem-solving exercises and realistic work sessions, discussions of techniques used to train users, and opportunities for question and answer sessions. The short sessions are used primarily to provide administrative persons with enough information about ERIC so that they can recommend whether their organizations should acquire ERIC materials and begin to offer information services, whereas the week-long programs are to provide training to staff of new educational information centers. A report that outlines the content and assesses the value of the longer training programs will be available in October or November through Research in Education (18).

4. Independent workshops sponsored by State educational agencies. Inservice training programs also are being sponsored by State educational agencies. On an experimental basis, one State agency is now training county educators to use the services provided by the State information service center (which includes computer searching of ERIC files). These county personnel are, in turn, responsible for training local school personnel within their home counties in effective use of ERIC. Similar two-step training programs are being developed on a regional basis involving five states.

5. Demonstrations of on-line, computer retrieval of information about ERIC documents. The newest development in the operation of ERIC is on-line computer searching of the ERIC file which now approaches 40,000 selected documents. Two on-line terminals are in operation: one in the Educational Reference Center in the Office of Education in Washington, D.C.; and the other in the San Francisco Regional Office of the Office of Education. Both provide computer searching and serve as demonstration and training sites as well. In addition, the Educational Reference Center is staffed to provide individual and group orientation and consultation regarding ERIC and to permit staff from educational organizations to work within the Center to acquire some on-the-job training in the use of all ERIC tools, including on-line searching.

Preservice in use of ERIC

The third training task, and one just now beginning, is to develop ERIC training programs for today's graduate and undergraduate students. To date ERIC training efforts have focused on preparing persons already working in education. Now, training must be extended as well to the coming generations of educators, researchers, educational reference

specialists, and others. Two efforts are being initiated. First, schools and departments of education are being encouraged to use or adopt existing ERIC training materials for providing training to their students. Major professional organizations will be asked to assist in this effort. Second, ERIC staff will select ERIC course materials developed by various colleges and universities and will announce these materials in Research in Education, make them available through the ERIC Document Reproduction Service, and will encourage their use by institutions of higher education.

Training materials related to scientific and technical information systems in the United States.

In addition to its training interests related to use of ERIC, the Office of Education has been working with the President's Committee on Scientific and Technological Information (COSATI) of the Office of Science and Technology (Office of the President) to develop materials for acquainting users with scientific, technical, and other information systems and sources in the U.S. Among the products from this effort are:

1. A Brief Guide to Sources of Scientific and Technical Information (19), describes major public and private sources of scientific and technical information in the United States.

2. "Paper Blizzard," a three part, 45 minute film series on Federally supported information systems in the United States: Part 1 is an introduction to two specialized treatments; Part 2 is designed for training scientists in use of the systems; Part 3 is to acquaint librarians with major Federal information systems. An eight-page printed brochure accompanies Parts 2 and 3. The films and brochures are available from the Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio, 43201.

COSATI also has released several guides to information sources and systems in the United States. Both are available from the Federal Clearinghouse on Scientific and Technical Information, 5285 Port Royal Road, Springfiled, Virginia, 22151.

1. Directory of Federally Supported Information Analysis Centers (20), lists and describes 199 information analysis centers in scientific, technical, educational and other fields in the United States.

2. Study of Scientific Data Activities in the United States (21); describes sources of scientific and technical data, in contrast to documents, in the United States.

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1. Lee G. Burchinal, "ERIC--Development Through June, 1968," available from the ERIC Document Reproduction Service, as ED 020 405*.

2. Lee G. Burchinal, "Evaluation of ERIC, June, 1968," also available from the the ERIC Document Reproduction Service, as ED 020 449.*

3. Lee G. Burchinal, "The Educational Resources Information Center: An Emergent National System," Journal of Educational Data Processing,7 (April, 1970), 55-67.

4. Harvey Marron, "ERIC...A National Network to Disseminate Educational Information," Special Libraries, 59 (December, 1968), 775-782.

5. Harvey Marron, "Management of a Decentralized Information System," Journal of Educational Data Processing, 7 (April 1970), 68-73.

6. Harvey Marron, "Information Network Development. Cost Data for the Operation of a Decentralized Information Network: Educational Resources Information Center," Information Storage and Retrieval, 6 (June 1970), 221-227.

7. James L. Eller and Robert L. Panek, "Thesaurus Development for a Decentralized Information Network," American Documentation, 19 (July 1968), 213-220.

8. James L. Eller, "The Development and Potentials of the ERIC Thesaurus for Educators," Journal of Educational Data Processing, 7 (April 1970), 74-80.

9. All About ERIC, Special Issue of the Journal of Educational Data Processing, 7, (April 1970), 51-129.

10. Research in Education. Superintendent of Documents, Government Printing Office, Washington, D.C. 20402; domestic, $21 per year; foreign $26.25 per year for 12 monthly issues.

11. Current Index to Journals in Education. Crowell, Collier, Macmillan Information Corporation, 909 Third Avenue, New York, New York, 10027; $34.00 per year for 12 monthly issues; $35.00 for semi-annual and annual cumulative indexes; foreign postage added.

12. Thesaurus of ERIC Descriptors: 1970 Edition. CCM Information Corporation, 909 Third Avenue, New York, New York 10027; $8.95 hardcopy, 300 pp.

13. ERIC Products, 1967-1968: from the ERIC Document Reproduction Service, as ED 029 161, $ 0.25 microfiche, $1.30 hardcopy, includes 149 citations.*

14. ERIC Products, 1968-1969: from ERIC Document Reproduction Service, as ED 034 089, $ 0.25 microfiche, $1.80 hardcopy, includes 240 citations.*

15. ERIC Products, 1969-1970: available from ERIC, National Center for Educational Communication, U.S. Office of Education, Washington, D.C. 20202; free; includes 366 citations.

16. How to Use ERIC. Superintendent of Documents, Government Printing Office, Washington, D.C. 20402; 35 cents (estimated);

17. ERIC: Your Guide to Current Educational Information. An eight page guide to use of ERIC. Single copies are available free from ERIC, National Center for Educational Communication, U.S. Office of Education, Washington, D.C. 20202.

18. A Program to Provide for Increased Communication Among Educational Information Centers. Final Report. June 1970. Will be announced in Research in Education in September or October. 248 pp.

19. Saul Herner, A Brief Guide to Sources of Scientific and Technical Information. Information Resources Press. Washington, D.C. 1969. 102 pp.

20. President's Committee on Scientific and Technical Information, Office of Science and Technology, Directory of Federally Supported Information Analysis Centers. Available from the Clearinghouse for Federal Science and Technology Information as PB 189-300.

21. President's Committee on Scientific and Technical Information, Office of Science and Technology, Study of Scientific Data Activities in the United States. Available from the Clearinghouse for Federal Science and Technology Information as AD 670-606, 607, 608, 3 volumes.

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* Consult any recent issue of Research in Education for instructions for ordering documents from the ERIC Document Reproduction Service.

Appendix A

ERIC Clearinghouses (August 1970)

ERIC Clearinghouse on Adult Education
Syracuse University
107 Roney Lane
Syracuse, New York 13210

ERIC Clearinghouse on Counseling & Personnel Services
611 Church Street
Ann Arbor, Michigan 48104

ERIC Clearinghouse on the Urban Disadvantaged
Columbia Univ., Teachers College
1258 Amsterdam Avenue
New York, New York 10027

ERIC Clearinghouse on Early Childhood Education
University of Illinois
805 West Pennsylvania Avenue
Urbana, Illinois 61801

ERIC Clearinghouse on Educational Administration
University of Oregon
Hendricks Hall
Eugene, Oregon 97403

ERIC Clearinghouse on Educational Media and Technology
Stanford University
Cypress Hall
Palo Alto, California 94305

ERIC Clearinghouse on Exceptional Children
Council for Exceptional Children
1411 Jefferson Davis Highway
Arlington, Virginia 22202

ERIC Clearinghouse for Higher Education
George Washington University
One Dupont Circle, Suite 630
Washington, D.C. 20036

ERIC Clearinghouse for Junior Colleges
University of California
Powell Library
405 Hilgard Avenue
Los Angeles, California 90024

ERIC Clearinghouse on Library and Information Sciences
American Society for Information Science
1140 Connecticut Ave., NW. Suite 804
Washington, D.C. 20036

ERIC Clearinghouse for Linguistics
1717 Massachusetts Avenue, NW.
Washington, D.C. 20036

ERIC Clearinghouse on Reading
Indiana University
200 Pine Hall
Bloomington, Indiana 47401

ERIC Clearinghouse on Rural Education and Small Schools
Box 3 AP
University Park Branch
New Mexico University
Las Cruces, New Mexico 88001

ERIC Clearinghouse on Science Education
Ohio State University
1460 West Lane Avenue
Columbus, Ohio 43221

ERIC Clearinghouse for Social Science Education
Social Sciences Building
970 Aurora Avenue
Boulder, Colorado 80302

ERIC Clearinghouse on Teacher Education
One Dupont Circle, Suite 616
Washington,D.C. 20036

Dr. Arthur M. Cohen
ERIC Clearinghouse for
Junior Colleges

University of

ERIC Clearinghouse on the Teaching
of English
508 South Sixth Street
Champaign, Illinois 61820

ERIC Clearinghouse on the Teaching of
Foreign Languages
62 Fifth Avenue
New York, New York 10011

ERIC Clearinghouse on Tests, Measurement,
and Evaluation
Educational Testing Service
Princeton, New Jersey 08540

ERIC Clearinghouse on Vocational and
Technical Education
Ohio State University
1900 Kenny Road
Columbus, Ohio 43210

Appendix B: Indicators of the Development and Use of ERIC

Indicators of the development and use of ERIC from its inception in 1966 through the year ending June 1970 include:

1. Expansion from 11 to 20 clearinghouses.

2. From zero to an annual acquisition of approximately 32,000 reports, only about one third of which are selected for announcement in Research in Education.

3. An increase in the number of reports cited in Research in Education from 2,254 in 1967 (the first full year of operation) to over 10,000 per year.

4. Sales of microfiche from the ERIC Document Reproduction Service approached 10 million in the year ending June 1970 compared with less than 500,000 in 1967.

5. Sales of close to 48,000 reports in hardcopy in the year ending June 1970 compared with approximately 6,000 in 1967.

6. Citations in Current Index to Journals in Education increased from 11,707, based on 220 periodicals during calendar year 1969, whereas over 13,000 citations, based on over 500 periodicals will be announced during the calendar year 1970.

7. The total ERIC collection of screened documents increased from approximately 5,000 by the end of 1967 to over 40,000 by the end of June 1970.

8. Information analysis publications of the individual clearinghouses continue to rise: from 149 in 1968 to 336 in the year ending June 1970.

9. Clearinghouses maintain selective dissemination services through regular "ERIC columns"in professional journals. The 44 columns reach over 500,000 subscribers.

10. Clearinghouses provide users direct responses to inqueries for information: over 56,000 questions were answered in the year ending June 1970.

11. Over 350 computer searches were completed in the first six months of 1970 at the two ERIC on-line searching facilities.

12. Also, in the first months of 1970, batch-type computer searching was installed at 14 sites across the United States.

13. Finally, three annual editions of the ERIC Thesaurus have been published, and the number of descriptors has expanded from 2,800 in the first edition (1968) to 7,000 in the 1970 edition.